

RESPONSES TO EPA COMMENTS ON
BURLINGTON ENVIRONMENTAL'S SEPTEMBER 4, 1990
PIER 91 DRAFT WORK PLAN

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GENERAL COMMENTS

- 1 Plans to provide existing site investigation data for adjacent areas of Pier 91 must be provided in the work plan. In addition, an evaluation of the need for further investigation of this area must be performed based on the information obtained, and if warranted, plans for conducting further investigation provided. In particular, Figure C-1 indicates a series of "W" wells on the Pier, but no information regarding these wells is provided in the report. Provide the relevant information about these wells (e.g., well boring data, sampling results, water levels, installation dates, etc.), and discuss the consistency of these data with other known data. In addition, the Port of Seattle's (Port) comments (see enclosed) reference Harding Lawson wells and Hart-Crowser and Converse wells. Provide the locations of these wells (if they are different from the "W" wells) and any relevant data. Finally, data pertaining to the discovery of product in wells and borings to the east of the Small Yard should also be included. EPA recognizes that a lot of this information has to be obtained from the Port of Seattle.

Response to comment (1):

See the section on the historical site evaluation, in Part C of the revised Work Plan. Also see Section 13, Assessment of Existing Offsite Data, in Part C of the revised Work Plan.

- 2) Explain the existence of a predominantly downward vertical gradient between the upper and lower aquifer given the hydrogeological setting of the area. Pier 91 is in a discharge area where a downward gradient would be unexpected. The downward gradient also has to be explained in consideration of the much higher specific conductivities that are measured in the lower aquifer wells than in the upper aquifer wells, suggesting salt water intrusion into the lower aquifer. Again, a predominant downward gradient would be unexpected in a zone under tidal influence.

Response to comment (2):

Pumping wells completed in the lower aquifer in the vicinity of the Pier 91 facility may be causing the deep aquifer to be underpressured locally, but this hypothesis has not been verified. Burlington Environmental has contacted some of the parties operating on properties adjacent to the facility, including Burlington Northern Railroad, the City Ice

Cold Storage Company, and the Washington National Guard. None of the personnel interviewed were aware of pumping or extraction wells operating on the respective property.

The new potentiometric data, hydraulic test data, lithologic/stratigraphic data, and geochemical data from the proposed 14 new monitoring wells will be evaluated at the time the RFI report is prepared, in an attempt to explain the apparent downward gradient.

- 3) Some of the information regarding well CP-105B is not consistent with a well completed in an aquitard. First, the boring log and well completion diagram indicate that Well 105B is in the silty sand aquitard, yet the well is completed at an elevation similar to the other three wells that were completed in the lower sand aquifer. Second, the hydraulic conductivity for this well is not significantly different from other wells completed in the sand and gravel units as to suggest a different sedimentary material or unit. Finally, the aquitard should have resulted in higher gradients between Well 105B and the wells located at the same elevation that are in the lower sand aquifer. This is not the case. The horizontal gradient for the February 1989 data indicates that the gradient between wells 105B and 104B is half the gradient between wells 104B and 103B, the reverse of what would be expected. These discrepancies in the data regarding well 105B must be explained.

Response to comment (3):

The statements made by EPA in this comment regarding monitoring well CP-105B appear to be correct. Examination of the borehole log for well CP-105B indicates that the vertical spacing between lithologic samples was probably too great to confirm the stratigraphic interpretation provided on the borehole log. Burlington will repeat the bail/slug test of well CP-105B and will reevaluate the hydraulic conductivity data for this well. Additionally, Burlington will evaluate the lithologic/stratigraphic data and potentiometric data from the 14 proposed new monitoring wells at the time the RFI report is prepared.

- 4) The determination of a continuous aquitard beneath the site is critical to understanding groundwater flow at this site. If the "aquitard" is a legitimate barrier to groundwater flow vertically, then it would greatly increase confidence regarding the vertical migration of contaminants to the deeper aquifer. This surface would have the potential to change the direction of groundwater flow, to control the spread of dense nonaqueous phase liquids (DNAPLs) may not necessarily follow groundwater flow directions, and change the groundwater velocity as the upper aquifer thins and thickens. Provide a process for

determining the shape, extent, and hydraulic properties of this layer (e.g., field and pump tests, contouring, etc.). Figure 1 (attached) is a contour map of the upper surface of the silty sand layer. This map shows a 4- to 5-foot drop in the surface that runs north/south down the west side of the facility, a feature that should have a significant impact on groundwater velocity. Figure 2 (attached) is a contour map of the March 1, 1989 head data for the shallow aquifer showing a doubling of the gradient between wells 106 and 109 and between wells 109 and 110.

Response to comment (4):

Burlington agrees that additional work is necessary to document the shape, thickness, extent, and hydraulic properties of the aquitard beneath the site. Part C of the revised Work Plan provides for 7 additional boreholes that will confirm the elevation of the top of this layer. Of these 7 boreholes, 3 boreholes will penetrate the entire thickness of the aquitard. At least one Shelby tube sample of the aquitard material will be collected from each deep borehole and will be tested to determine the vertical hydraulic conductivity (permeability) of the unit. Two of the proposed deep boreholes (CP-107B and CP-115B) are located adjacent to shallow monitoring wells. Upon their completion as monitoring wells, in conjunction with CP-103B, CP-105B, and CP-108B, they will provide data on the vertical hydraulic gradient between the upper and lower aquifers.

Effective February 1992, water levels will be measured monthly at the facility. This will continue throughout implementation of this Work Plan. Finally, all the data gathered as described above will be evaluated. Contour maps of the upper and lower limits of the aquitard will be prepared. These maps will be used to evaluate groundwater flow.

- 5) None of the current or proposed groundwater monitoring wells are constructed to detect a DNAPL on the surface of the silty sand layer, yet this layer has the potential to contain and control DNAPL movement. Contaminants that have the potential to form or be sourced from DNAPLs have been detected on-site above health-based limits. Additional wells need to be constructed at the base of the upper aquifer that are capable of detecting DNAPLs that could form along the surface of this layer. Provide well locations and construction details for additional wells able to detect DNAPLs, if present, along the silty-sand layer.

Response to comment (5):

In Part C, Section 7.1 of the revised Work Plan, Burlington proposes to install four wells (CP-113, CP-115A, CP-120, and CP-121) that would be capable of detecting DNAPLs at the base of the shallow aquifer.

- 6) Provide information on the water source for, function, water budget, and construction of Lake Jacobs. Discuss the impacts Lake Jacobs is having on groundwater flow under various seasonal and operational conditions of provide plans for obtaining this information.

Response to comment (6):

The requested information will be provided as part of the proposed historical site evaluation. See Part C of the revised Work Plan.

- 7) Water level monitoring must be conducted on at least a monthly basis at all available wells in order to get a more accurate understanding of the aquifer and its variability with seasons, tides, etc. More frequent water level monitoring must be considered in light of tidal influence in the area. Provide a plan and schedule for water level monitoring.

Response to comment (7):

Water levels in all of the "CP"-designated wells at the facility are currently being monitored on a monthly basis. This monitoring will continue until the Pier 91 RFI begins, at which time monitoring will be performed according to the plan presented in Section 11, Part C of the revised Work Plan.

- 8) Modify the water quality sampling plan so that it will continue on at least a quarterly basis for one year. The RFI report need only be based on the first sampling event.

Response to comment (8):

Part C of the Work Plan has been revised to reflect quarterly sampling of monitoring wells for a period of one year. Burlington reserves the option to modify the sampling parameter list based on the results of the first sampling round.

- 9) The three existing wells in the lower aquifer are not sufficient to define the groundwater flow nor the degree of contamination in the lower aquifer. Contamination has been detected in all three lower aquifer wells and two out of three of the wells have had exceedences of EPA health-based limits. In addition, none of the three wells are located below the most concentrated portion of the contaminant plume present in the upper aquifer. Include plans for installing additional wells in the lower aquifer in the Work Plan.

Response to comment (9):

In the revised Work Plan, Burlington has proposed that three additional groundwater monitoring wells (CP-107B, CP-115B, and CP-122B) be completed in the deep aquifer beneath the facility. These installations should be useful for gathering additional information on the characteristics of the silty sand layer, estimating vertical hydraulic gradients between the two aquifers, delineating the groundwater flow pattern within the deep aquifer, and defining the extent of contamination within the deep aquifer.

- 10) There have been two documented releases along the railroad tracks west of the warehouse. Provide sampling plans for this area or provide a justification for why sampling is unnecessary.

Response to comment (10):

According to Burlington records, the releases in question consisted of viscous, tarlike oils released primarily over asphalt surfaces. The material was so viscous that cleanup required scraping and steam cleaning of affected surfaces. However, because of the potential impact to storm drains, Part C of the Work Plan has been revised to include sampling of sediment in storm drains to evaluate residual impact.

- 11) The storm water sump near the oil/water separator needs to be evaluated as a potential contamination source. An inspection of the storm sump's physical integrity as well as a review of repairs to this unit needs to be conducted. Sediment in this sump must be tested. Provide plans for this inspection and testing in the Work Plan.

Response to comment (11):

As requested, the storm water sump near the oil/water separator will be evaluated as a potential contaminant source. Initially, sediment from the sump will be sampled. Based on the results of this sampling, either the sump will be cleaned and inspected or no further action will be required. If cleaning and inspection are shown to be necessary, specific plans will be prepared and submitted to EPA for approval.

- 12) For the construction of well CP-115 through CP-119, a screening method is needed to determine if additional soil samples are necessary. As proposed, only two soil samples will be taken per well. As much as 6 feet could separate these two sampling locations and no samples will be from below 8 feet. By a screening method, such as an HNU, a process should be established for monitoring the well cuttings and selecting additional soil sampling intervals if there are indications that non-sampled areas are more contaminated than those being sampled in accordance with Work Plan. This process is needed to ensure that all significant phases of subsurface contamination are being monitored without requiring automatic additional sampling. This site has a long history of industrial use and the list of potential contaminants and their sources are not well-known.

Response to comment (12):

Burlington has modified Part C of the Work Plan to include "headspace" screening of soil samples. This process will supplement visual screening and be used to determine which soil samples will be submitted to the analytical laboratory. In addition, the field screening records will serve as a qualitative indication of extent of contamination for those samples not submitted to the laboratory.

WORK PLAN-SPECIFIC COMMENTS

13) Page A-2, paragraph 1.

Comments from the Port state that the January 1931 site drawing and a September 1932 drawing indicate that a tank system in the area now leased by Burlington Environmental was owned by both the Port of Seattle Commission as well as by the Richfield Oil Company and that they were demolished in the 1940s. In addition, the Port states that the 1932 drawing indicates oil and gas piping from the present location of the Burlington Environmental facility existed and was operated by the Texas Company, successors to the California Petroleum Company. If Burlington Environmental is able to confirm these statements, this information should be included in this paragraph.

Response to comment (13):

The pertinent comment by the Port of Seattle contains two parts. The first part states:

Drawings from January 1931 and September 1932, indicate that the Seattle Port Commission and Richfield Oil Company were the probable owners/operators of tank systems located west of the present location of the Chemical Processors facility. These tank systems were demolished in the 1940s.

Note the wording "west of the present location" in this paragraph. Burlington has reviewed Port of Seattle archive drawings 41-85 and 41-101, dated 1/14/31 and 9/28/32 respectively. Burlington has also reviewed Port of Seattle archive drawings 42-163 through 42-171, which are dated 6/13/42, and drawing 46-75, dated 3/5/46. These drawings support the above comment by the Port of Seattle; therefore Burlington concurs with this comment. However, because the demolished tank system was located offsite, Burlington feels that it is not appropriate to discuss the tank system in the "Site Description and History" section of the Work Plan. Instead, this information will be summarized in the offsite data summary report as part of the Assessment of Existing Offsite Data.

The second part of the comment by the Port of Seattle states:

The September 1932 drawing shows oil and gas piping from the location of the present Chemical Processors facility. This piping was operated by the Texas Company who were successors to California Petroleum Company.

Burlington reviewed Port of Seattle archive drawing 41-101, dated 9/28/32, and found that it supports this comment. This information has been included in the revised Work Plan.

- 14) Page A-2, 3rd paragraph.

For clarification purposes, the second sentence should be restated to indicate that "The property" means the present Burlington Environmental facility property.

Response to comment (14):

The indicated change has been made. See Part A of the revised Work Plan.

- 15) Page A-2, last paragraph.

Somewhere in the report, Burlington Environmental must provide a complete list of the wastes that are, and have been historically, managed at the Pier 91 facility. A complete listing is necessary since there is a wide variety of contaminants in the soil and groundwater.

Response to comment (15):

Burlington has compiled a list of wastes as requested. See Table A-1 in Part A of the revised Work Plan.

- 16) Page A-7, Figure A-3.

Port comments indicate that these figures are not up to date and do not include pipelines leased by Burlington Environmental. If this comment is correct, Burlington Environmental must update this figure and add the pipelines to this figure. The figure must include all areas leased by Burlington Environmental, including loading berths, if appropriate.

Response to comment (16):

The pipeline corridor to loading berths K and L has been added to Figure A-2 as requested.

17) Page A-8, 1st paragraph.

If the comments from the Port are accurate, then the following modifications to this paragraph are needed:

- 17a) If the words "subsequent oil seepage into water ponded behind a fill berm" are referring to Lake Jacobs, then the proper name for this body of water should be used since the ponded water has an identifying name and because the words "water ponded" implies a temporary state which is misleading if it is actually a more permanent entity. Also, the word "subsequent" should only be used in the afore-quoted sentence if the oil seepage was found to occur as a consequence of the contaminated dredge project, as can be implied by this sentence.

Response to comment (17)(a):

The indicated changes have been made. See Part A of the revised Work Plan.

- 17b) It is necessary to include details of the investigations cited on this page if they relate to the hydrogeology or potential for contamination at this site.

Response to comment (17)(b):

In the timeframe allowed for modification of the Work Plan, there was insufficient time to fully evaluate and incorporate data from all previous studies of the area. In recognition of this, a new task has been added to the Work Plan to allow for collection and evaluation of previously-collected data. This data will be used to complement data collected during this phase of the project and will be incorporated into final reports. See Section 13, Assessment of Existing Offsite Data, in Part C of the revised Work Plan.

- 17c) If the "Port of Seattle Short Fill Monitoring 1985-1990" reports (1989, 1989) mentioned in the Port's comments are relevant to the hydrogeology in this area, then the results from these reports and impacts on local hydrology must be discussed in the Work Plan.

Response to comment (17)(c):

Burlington has attempted but has been unable to acquire the indicated reports, which are only drafts at this time. Burlington will continue its effort to acquire this information, and will review it when obtained. If the information is relevant it will be integrated into the RFI and discussed in the RFI Report.

- 18) EPA concurs with the Port's comment that Section 4 of the Work Plan should either provide the results of all environmental studies discussed in Section 3 of the Work Plan or be re-titled in such a way as to indicate that only SE/E studies are discussed therein.

Response to comment (18):

Burlington has re-titled Section 4 as indicated. See Part A of the revised Work Plan.

- 19) Page A-9, Item #2.

EPA concurs with the Port's comment that it is an oversimplification to state that the stratigraphic units are laterally continuous and nearly horizontally bedded when Item #5, page A-9, states that the deepest unit was not found at the northern boundary of the site and because of the discrepancies concerning well 105B (see comment #3). Please modify the language in this item to reflect this comment.

Response to comment (19):

The language has been modified in the revised Work Plan.

- 20) Page A-10, Item #8.

Since definitive proof of the existence of the aquitard is not yet available (see comment #4), the first sentence of this paragraph must be modified to the effect that it states that it is **believed** that the middle hydrostratigraphic unit is an aquitard.

Response to comment (20):

The sentence has been reworded in the revised Work Plan.

- 21) Page A-12, Section 4.3, Items #7 and #8.

EPA concurs with the Port's comment that "generally near or below the method detection limits" is too vague and misleading a description and that a range of values or other description should be provided that more accurately represents the sampling results to date.

Response to comment (21):

Burlington has provided a more specific description for these items. See Part A of the revised Work Plan.

22) Table A-1, Oil/Water Separator:

The conclusions column of Table A-1 states that additional groundwater characterization should be conducted with TB-2, but no plans for doing this are provided in the Work Plan. Include characterization of groundwater in TB-2 in the Work Plan. In addition, an inspection of the oil/water separator's physical integrity is necessary. The Work Plan should include a history of repairs at this unit, a description of how the inspection will be conducted, that it be certified by a qualified engineer, and that sampling steps will be conducted if there is evidence that the integrity of this unit to prevent releases has been breached. This inspection should include the oil/water separator drain line as well as the containment structure.

Response to comment (22):

The conclusions column of Table A-1 of the Work Plan has been modified to indicate that additional groundwater characterization be performed on proposed monitoring well CP-120 rather than test boring TB-2. Test boring TB-2 was completed and decommissioned during the Phase II hydrogeologic investigation (Sweet-Edwards/EMCON, 1989). The oil/water separator is nearer to the proposed location of the shallow aquifer monitoring well CP-120 than to any other existing or proposed monitoring well.

The oil/water separator was emptied, cleaned, and covered in February 1990 and has remained out of service since then. Since Burlington began operations at the Pier 91 facility, the oil/water separator was periodically (approximately once every two years) emptied and cleaned as part of routine maintenance. Burlington found no evidence that the unit's integrity had been compromised. Current plans call for the oil/water separator to be removed, and if contamination is present, it will be addressed under corrective action.

23) Table A-1, MDO Diesel Yard:

Plans for the air assessment stated in the conclusions and recommendations section of Table A-1 have to be described in the Work Plan.

Response to comment (23):

The air assessment will be completed as part of the risk assessment (see Part D), or as part of Burlington's response to the interim measures questions (see Appendix D-1), depending upon which of the two is completed.

24) Table A-1, Big Yard Tanks:

Additional soil sampling in the northeastern quadrant of the Big Yard Tanks is required. Provide plans for this sampling in the Work Plan.

Additional soil sampling is required in the Big Yard Tanks because: a) documented releases have occurred in this yard, e.g., 420,000-gallon release from Tank #91 in '78, b) there is a high probability of undocumented releases in this yard, e.g., tank bottoms rest on the ground surface where they cannot be readily inspected for leaks, and this yard was not paved until 1986, c) the only sampling in this yard has been along the western border.

Response to comment (24):

Plans for additional soil sampling in the northeast quadrant of the Big Yard have been provided. See Table A-1 and Part C of the revised Work Plan.

25) Table A-1, Small Yard Tanks:

Additional soil characterization in the small tank yard is needed. Provide plans for this sampling in the Work Plan.

Additional sampling is required because: a) there is a history of solid waste management unit activity in this area, b) the yard contained a lot of former tanks that are now removed (Tank 118, 13 "Baker" tanks, and at least 9 other tanks in this yard prior to Burlington Environmental control), c) gas-contaminated soil was found outside the wall near Tank #112 in July '87, d) the yard was not paved until '82, e) the RCRA Facility Assessment recommends sampling in this area, f) no samples have been taken inside of this yard, g) we are looking for sources of known groundwater contamination in this area.

Response to comment (25):

Plans for additional soil sampling in the Small Yard have been provided. See Table A-1 and Part C of the revised Work Plan.

26) Table A-1, Pipe Alley Drainage:

For the pipe alley drainage, provide detailed plans for the physical inspection stated in the conclusion column of Table A-1. In addition, a history of repairs to this unit needs to be discussed and contingency sampling plans included if there is evidence that the integrity of the unit has been breached.

Response to comment (26):

The inspection referred to in this comment involves a careful visual inspection of the concrete containment area of the pipe alley. In early 1991, the pipe alley drainage was thoroughly cleaned and inspected, and cracks in the concrete were repaired. Burlington will provide documentation of this work in the RFI report.

27) Table A-1, Piping System:

Include detailed plans for evaluating the integrity of the piping system and for contingency sampling plans similar to that outlined for the pipe alley drainage.

Response to comment (27):

This comment refers to the bulk liquids transfer piping leading from the Burlington facility to berths K and L on Pier 91. This piping is hydrostatically tested annually by PANOCO. As described in Table A-2, Burlington will review records of the hydrostatic tests and verify that maintenance and corrective measures have been implemented where necessary.

28) Section B, Preliminary Technologies Evaluation:

The RFI Work Plan must contain procedures for gathering any data that is listed in this section as "data requirements" for specific corrective measure technologies (e.g., soil pH).

Response to comment (28):

Additional information has been provided as requested. See Part B of the revised Work Plan.

29) Section E.

The Work Plan must include a process for making modifications to the Work Plan based on information garnered during the site investigation. The schedule in Section E is premised on this type of process.

Response to comment (29):

The requested information has been provided. See Part E of the revised Work Plan.

30) Page C-3, 2nd full sentence.

EPA concurs with the Port comments that statements in this sentence, regarding the lack of need for wells in the lower aquifer due to a continuous aquitard and low contamination levels in the lower aquifer, are not sufficiently substantiated. Contamination above health-based standards has been detected in two of the three lower aquifer wells, and the hydraulic properties of the silty sand layer have not been determined. Modify these statements in the Work Plan appropriately.

Response to comment (30):

The statements have been modified as requested. See Part C of the revised Work Plan.

31) Page C-3, 1st full paragraph.

Substitute total metals analysis for the TCLP analysis. Total metals analysis is preferable in this instance in order to determine the relation of contaminant levels to health-based standards. Modify Table C-3 as necessary.

Response to comment (31):

The planned analyses have been modified as requested. See Table C-3 in Part C of the revised Work Plan.

32) Table C-3.

The metals analysis for soils should include the same metal contaminants of concern as listed for water on this table. In addition, testing for selenium and silver should be added to both the soil and groundwater testing, since these contaminants have not been previously tested for and the site has metal contamination.

Response to comment (32):

The planned metals analyses have been modified as requested. See Table C-3 in Part C of the revised Work Plan.

33) Section 2, Page C-8.

As part of the historical use or beneficial use survey, a review of structures and activities that might affect groundwater flow at the Pier (e.g., Lake Jacobs, piers, bulkheads, sheet pilings, utility conduits, etc.) must be conducted. Add provisions for obtaining this information to the Work Plan.

Response to comment (33):

The scope of the historical site evaluation has been expanded to provide the requested information. See Part C of the revised Work Plan.

34) Table C-2.

Add soil PCB analyses for wells CP-111 through CP-114 or justify why PCB analysis is not being performed for soil analysis in these wells.

Response to comment (34):

The suggested soil PCB analyses have been added. See Table C-2 in Part C of the revised Work Plan.

35) Table C-3.

Add groundwater PCB analysis for wells CP-111, CP-112, and CP-114 or provide a justification for why PCB analysis is not being conducted for water sample analyses in these wells.

Response to comment (35):

The suggested groundwater PCB analyses have been added. See Table C-3 in Part C of the revised Work Plan.

36) Page C-22, Item #2.

From the description provided in this paragraph, it is not clear what the length of the well screen will be for wells CP-116 through CP-119 and whether any portion of the screen will be above the water table. Please provide this information in the Work Plan.

Response to comment (36):

The requested information has been provided under number 2, Page C-26 of the revised Work Plan.

37) Page C-22, Item #3.

State that where bentonite chips are to be used they will only be sized in the ¼-inch to ¾-inch range.

Response to comment (37):

The statement has been added where indicated, in the revised Work Plan.

38) Page C-24, Item #4.

The caps on monitoring wells whose screening is completely or nearly completely below the water table should not be airtight since this can cause errors in water elevation measurements. Indicate provisions or steps taken to insure that caps for at-grade well completion are not airtight.

Response to comment (38):

Burlington views the placement of airtight caps on the riser pipes of wells with at-grade monuments as a necessary precaution against the inadvertent introduction of contaminants to the subsurface. Permanent placement of non-airtight caps on wells having at-grade monuments would likely compromise the effectiveness of the existing design to an unacceptable degree. The use of non-airtight caps would be acceptable for wells with above-grade monuments because any materials spilled on the ground in the vicinity of such a well presumably would not enter the well bore. However, above-grade monuments are not considered practical for use at the facility because they would substantially interfere with operations. Instead, Burlington will implement other measures to insure that water-level data from these wells are not corrupted by the effects of airtight caps. At this time, we propose to inspect all above-grade monitoring wells and add vents to any wells that need them. In addition, we propose to evaluate the length of time that would be required for water levels to equilibrate (assuming maximum water level differences and minimum hydraulic conductivity). Until this evaluation is complete, we propose to vent the "unvented" wells for a period of 1 to 2 hours prior to recording water levels. Burlington feels that this is a sufficient recovery period, because bail/slug test data for the wells (Sweet-Edwards/EMCON, 1988; Sweet-Edwards/EMCON, 1989) indicate that the water levels generally recovered within approximately 10 minutes during these tests.

39) Page C-25, Section 8.2.

The second sentence of this paragraph should be modified (modification in bold) so that the well is considered developed when the "discharge water is free of sediment and is nonturbid and when field measurements of pH and conductivity have stabilized." Also, any well development time limits must be removed from the RFI Work Plan. If the Permittee is unable to obtain samples representative of the aquifer being monitored, then the well must be reconstructed or a new well must be constructed that can provide adequate sample quality. It is the responsibility of the Permittee to properly develop the wells so that they obtain representative samples. In addition, the Work Plan should be modified to state that at least three times as much water will be removed during development as may have been added to the borehole during drilling.

Response to comment (39):

The suggested modifications have been made. See Part C of the revised Work Plan.

40) Page C-26, Item #1.

If the Port's comment is correct that there is a dedicated bladder pump installed in Seattle Well W-10, then Burlington Environmental should modify the Work Plan to indicate the use of this pump.

Response to comment (40):

The suggested modification has been made. See Part C of the revised Work Plan.

41) Page C-26, Item #1.

Please modify this item to include a statement to the effect that each complete round of water-level measurements will be obtained as quickly as possible in order to reduce the potential for external factors (e.g., tide, rain, etc.) to affect water levels.

Response to comment (41):

The requested modification has been made. See Part C of the revised Work Plan.

42) Page C-26, Item #1.

There is both a high potential and some preliminary evidence of the presence of LNAPLs and DNAPLs at this site. Although page C-26 states that a bailer and a pump will be used to collect samples for detection of sinkers and floaters, greater procedural detail is needed to understand and ensure that the proposed methods are technically adequate to detect these layers.

Response to comment (42):

A modified procedure for detection of LNAPLs and DNAPLs in monitoring wells is described in Section 9, Part C of the revised Work Plan.

43) Page C-27, Item #5.

Wells should not be pumped dry nor should any well be purged so as to expose a significant portion of the filter pack. The purging rate should be adjusted so that this situation is avoided. By exposing the filter pack, groundwater can cascade through the filter pack stripping volatiles from the water. The Burlington Environmental Georgetown RFI states that wells with screens below the water table will not be drawn-down below the top of the screen during purging or sampling and that wells that are screened across the water table will only be drawn down by a maximum of 10 percent of the saturated screen length during purging or sampling.

Response to comment (43):

As pertains to this issue, the Burlington Pier 91 revised RFI Work Plan has been made consistent with the Burlington Georgetown RFI Work Plan.

44) Page C-27, Item #7.

Analyses of metals should be performed on unfiltered samples.

Response to comment (44):

Samples submitted for total metals analysis will not be filtered. Samples submitted for dissolved metals analysis will be filtered as stated. See Part C of the revised Work Plan.

45) Table C-5, page C-29.

This table should be modified to include well CP-104B.

Response to comment (45):

The indicated modification has been made. See Table C-5 in Part C of the revised Work Plan.

46) Section D, Risk Assessment.

Please include in the Work Plan, plans to respond to the attached set of interim measures questions. These are the same set of interim measures questions that Burlington Environmental responded to for the Burlington Environmental Georgetown facility. Burlington Environmental may use this response to replace the plan for a formal risk assessment as outlined in Section D.

Response to comment (46):

Burlington has stated that we intend to either perform the risk assessment or respond to the interim measures questions. See Part D (Risk Assessment) of the revised Work Plan.

47) Section E, Schedule, Page E-4.

Modifications to the Work Plan based on this NOD may cause the schedule to change; however, as currently proposed, the schedule is too long. For instance, it seems reasonable that Task 3 and 4, Utility Locations and Beneficial Use Survey, can be conducted simultaneously with Tasks 1 and 2, Historical Review and Site Documentation Review. Similarly, Task 11, the risk assessment (which may be replaced with interim measures questions--see comment #46), could be conducted simultaneously with Task 11, the investigation analysis.

Response to comment (47):

Burlington has shortened the schedule. See Part E of the revised Work Plan.

48) Table F-3.

QA/QC procedures must be in compliance with SW-846. Quantitation limits listed in Table F-3 for acetone, 2-butanone, vinyl acetate, ethylbenzene, and chloromethane, are an order of magnitude higher than the practical quantitation limit listed in 40 CFR 264, Appendix IX. Please make appropriate changes so that the quantitation limits for test constituents meet the Appendix IX PQLs.

Response to comment (48):

The quantitation limit listed in Table F-3 for acetone, 0.100 mg/l, is consistent with the practical quantitation limit (PQL) specified in 40 CFR 264, Appendix IX. The values listed for the quantitation limits of 2-butanone, vinyl acetate, ethylbenzene and chloromethane have been modified to be consistent with the corresponding PQLs in Appendix IX. See Table F-3 in Part F of the revised Work Plan.

END OF COMMENTS